Coral Aquanox Installation Manual

Thermal Store Direct & Indirect Water Heaters

Installation & Servicing Instructions

Pack Contents

- Coral Aquanox vented water heater incorporating immersion heater(s) & thermal controls
- Visual discharge indicator
- Compression nuts & olives
- Immersion heater spanner
- Installation & servicing instructions
- Guarantee card
- Blending valve insulation kit

IMPORTANT

Please read & understand all these instructions before commencing installation.
Please leave this manual with the user for future reference.

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benchmark COLLECTIVE MARK

THE MARK OF QUALITY FOR THE INSTALLATION, COMMISSIONING AND SERVICING OF DOMESTIC HEATING AND HOT WATER SYSTEMS

THE BENCHMARK SCHEME

Benchmark places responsibilities on both manufacturers and installers. The purpose is to ensure that customers are provided with the correct equipment for their needs, that it is installed, commissioned and serviced in accordance with the manufacturer's instructions by competent persons and that it meets the requirements of the appropriate Building Regulations. The Benchmark Checklist can be used to demonstrate compliance with Building Regulations and should be provided to the customer for future reference.

Installers are required to carry out installation, commissioning and servicing work in accordance with the Benchmark Code of Practice which is available from the Heating and Hotwater Industry Council who manage and promote the Scheme.
Visit www.centralheating.co.uk for more information.

IMPORTANT NOTE TO USER: PLEASE REFER TO THE USER INSTRUCTIONS SECTION ON PAGE 15 FOR IMPORTANT INFORMATION WITH RESPECT TO THE BENCHMARK SCHEME

INTRODUCTION

Thank you for purchasing an Elson Thermal Store. The thermal store is manufactured in the UK to the highest standards and has been designed to meet all the latest relevant safety specifications.

The Elson Coral Aquanox thermal store is an Open Vented Hot Water only Thermal Store (HWTS).
The stored energy in a Hot Water only Thermal Store is only used indirectly via a natural convection hot water heat exchanger for producing instantaneous domestic hot water. The storage vessel of an open vented thermal store is open to atmosphere and it uses primary water to store thermal energy.

The thermal store is a purpose designed vented water heater. Hot water is delivered at mains water pressure. The unit has a stainless steel vessel, which ensures an excellent standard of corrosion resistance. The outer casing is a combination of resilient thermoplastic mouldings and plastic coated corrosion proofed steel sheet. All products are insulated with CFC free polyurethane foam to give good heat loss performance. (see Table 5, page 24)

This appliance complies with the requirements of the CE marking directive and is KIWA approved to show compliance with Water Regulations.

NOTE: Prior to installation the unit should be stored in an upright position in an area free from excessive damp or humidity.

IMPORTANT:

THE THERMAL STORE MUST BE INSTALLED AND COMMISSIONED BY A COMPETENT PERSON. PLEASE READ AND UNDERSTAND THESE INSTRUCTIONS BEFORE INSTALLING THE THERMAL STORE. FOLLOWING INSTALLATION AND COMMISSIONING, THE OPERATION OF THE THERMAL STORE SHOULD BE EXPLAINED TO THE USER AND THESE INSTRUCTIONS LEFT WITH THEM FOR FUTURE REFERENCE.

THIS APPLIANCE IS NOT INTENDED FOR THE USE BY PERSONS (INCLUDING CHILDREN) WITH REDUCED PHYSICAL, SENSORY OR MENTAL CAPABILITIES, OR LACK OF KNOWLEDGE AND EXPERIENCE, UNLESS THEY HAVE BEEN GIVEN SUPERVISION OR INSTRUCTION CONCERNING THE USE OF THE APPLIANCE BY A PERSON RESPONSIBLE FOR THEIR SAFETY.

CHILDREN MUST BE SUPERVISED TO ENSURE THEY DO NOT PLAY WITH THE APPLIANCE.

kiwa approved product

UK WATER SUPPLY REGULATIONS

TECHNICAL SPECIFICATION

OPERATIONAL SUMMARY

Total storage volume (V_T)		120ltrs 150ltrs 175ltrs 210ltrs
Maximum mains pressure		0.5MPa (5 bar)
Heat Loss	120ltr 150ltr 175ltr 210ltr	1.75kWh/24h 2.02kWh/24h 2.23kWh/24h 2.49kWh/24h
Store thermostat settings		12-85°C +4/-6°C
Overheat thermostat settings		96°C+2/-5°C
Maximum working pressure for DHW heat exchanger		0.5MPa (5 bar)
Pressure Loss (F_{DHW})		0.5 bar at 12.6ltrs/min
DHW Volume (Volume of water >40°C 75°C store temp at 12.6ltrs/min)	120ltrs 150ltrs 175ltrs 210ltrs	115ltrs 123ltrs 146ltrs 168ltrs
DHW Outlet temperature setting		55°C (TMV2 adj 35-60°C)
Maximum working pressure for Primary heat exchanger		1.0MPa (10 bar)
Thermal rating of Primary heat exchanger		11kW
Pressure Loss (F_{PHE})		0.2 bar at 15ltrs/min
Ingress Protection		IPX2
Electrical rating		3kW @ 240V ac
Weight when full		See Table 1

LIMITATIONS

The Thermal Store water heater should not be used in association with any of the following:

- Solid fuel boilers or any other boiler in which the energy input is not under effective thermostatic control, unless additional and appropriate safety measures are installed.
- Ascending spray type bidets or any other class 1 back syphonage risk requiring that a type A air gap be employed.
- Steam heating plants unless additional and appropriate safety devices are installed.
- Situations where maintenance is likely to be neglected or safety devices tampered with.
- Water supplies that have either inadequate pressure or where the supply may be intermittent.
- In areas where the water consistently contains a high proportion of solids, e.g. suspended matter that could block the blending valve, unless adequate filtration can be ensured.
- In areas where the water supply contains chloride levels that exceed 200mg/l.

Type	Model Reference	Nominal Capacity (litres)	Weight of unit empty (Kg)	Weight of unit full (Kg)
Indirect	120ti	120	43	170
	150ti	150	53	210
	175ti	175	57	239
	210ti	210	67	291
Direct	120td	120	38	165
	150td	150	48	205
	175td	175	52	234
	210td	210	63	287

Table 1: Unit weights

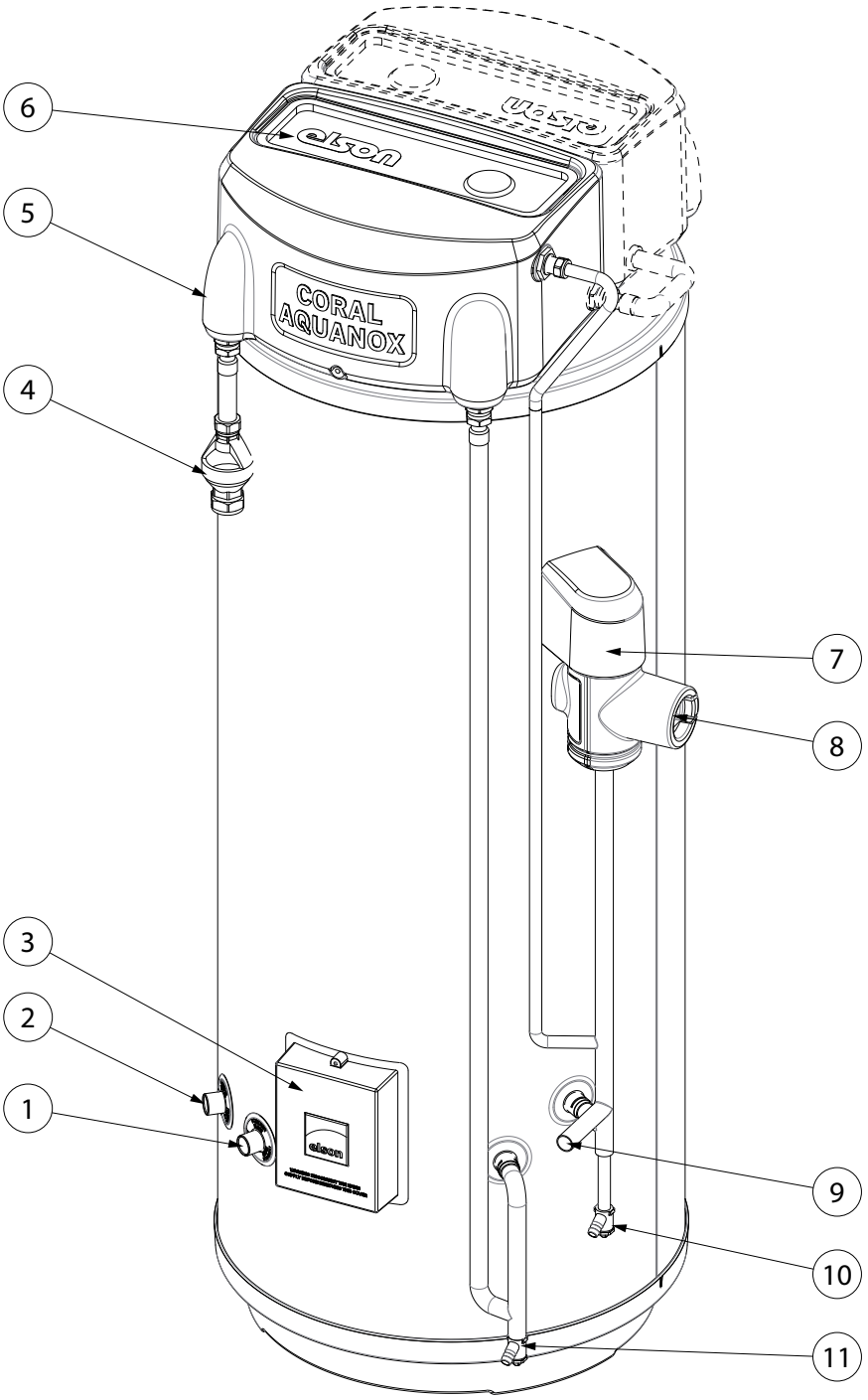


Fig. 1 Key Features

1	Primary Coil Flow Connection - 3/4”/22mm compression
2	Primary Coil Return Connection - 3/4”/22mm compression
3	Electrical Connection Housing - IPX2
4	Visual Discharge Indicator - 22 x 28mm compression
5	Feed & Expansion Header Tank
6	Feed & Expansion Header Tank Lid
7	Blending Valve Insulation Cover
8	Hot Outlet (TMV2) - 22mm compression
9	Cold Supply Inlet - 22mm compression
10	DHW Coil Drain
11	Thermal Store Cylinder Drain

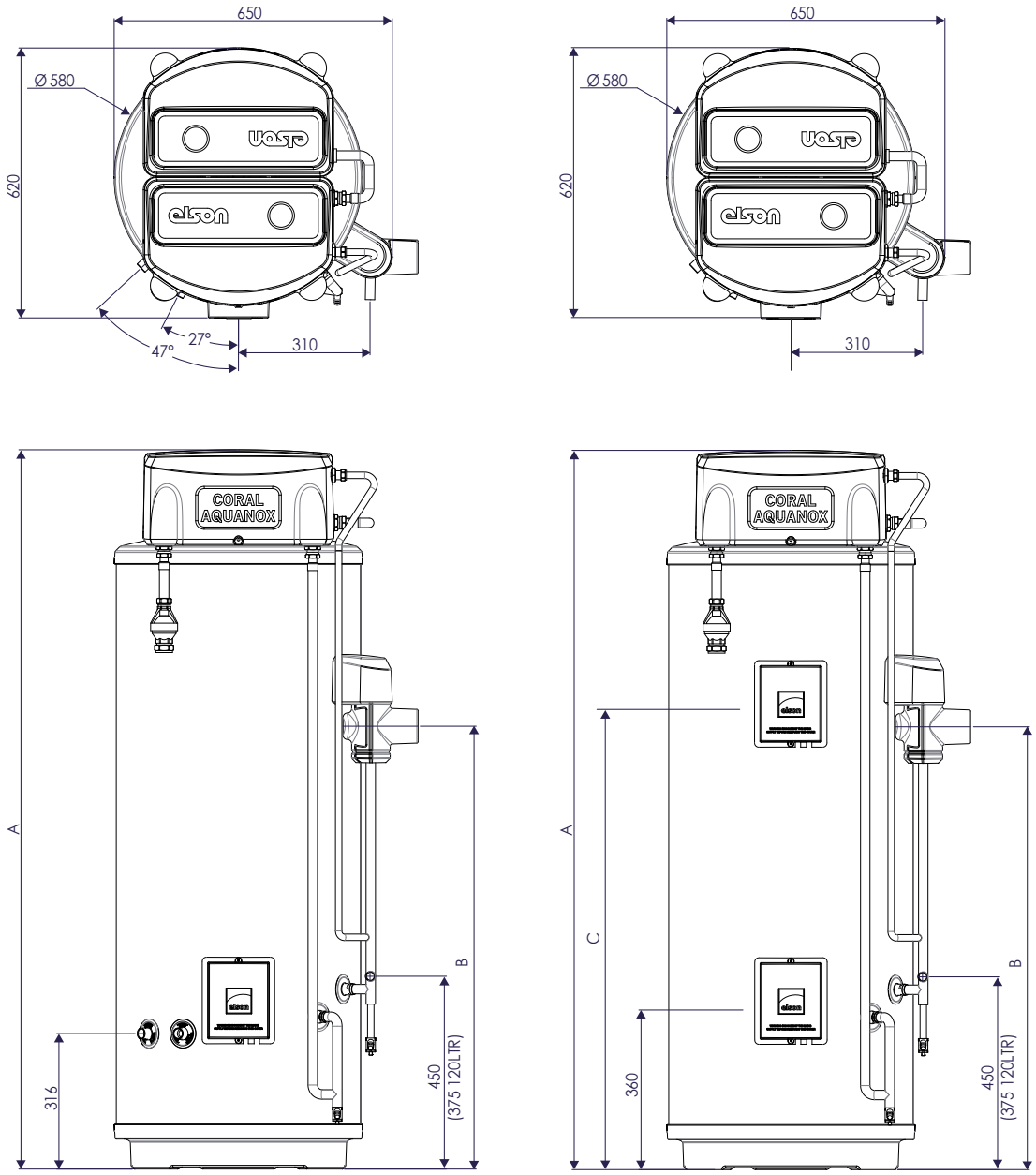


Fig. 2 Dimensions and performance (Auto-fill versions shown)

Type	Model Reference	Dimensions (mm)			Total Storage Volume (V_T)	Coil Rating (kW)		Hot Water Capacity (ltrs) (volume of water drawn off >40°C)		Hot Water Capacity (ltrs) (v40°C)	
		A	B	C		Hot Water Coil	Primary Coil	Store Temp 75°C	Store Temp 85°C	Store Temp 75°C	Store Temp 85°C
Direct	120td	1111	516	-	120	35	11	115	144	157	202
	150td	1274	626	724	150	35	11	123	154	166	215
	175td	1450	801	900	175	33	11	146	190	180	264
	210td	1677	1033	1127	210	33	11	168	216	213	299
Indirect	120ti	1111	516	-	120	35	11	115	144	157	202
	150ti	1274	626	-	150	35	11	123	154	166	215
	175ti	1450	801	-	175	33	11	146	190	180	264
	210ti	1677	1033	-	210	33	11	168	216	213	299

Table 2: Dimensions and performance

Note:

1. Thermal store tested in conformance with the HWA Performance Specification for Thermal Stores

INSTALLATION GENERAL

WATER SUPPLY

Bear in mind that the mains water supply to the property will be supplying both the hot and cold water requirements simultaneously.

It is recommended that the maximum water demand is assessed and the water supply checked to ensure this demand can be satisfactorily met.

Note: A high mains water pressure will not always guarantee high flow rates.

Wherever possible the mains supply pipe should be 22mm. We suggest the minimum supply requirements should be 0.15MPa (1.5 bar) pressure and 20 litres per minute flowrate. However, at these values outlet flow rates may be poor if several outlets are used simultaneously. The higher the available pressure and flow rate the better the system performance.

HARD WATER AREAS

The building regulations L1A: New dwellings/L1B: Existing dwellings and the requirements set out in the Domestic Building Services Compliance Guide specify that 'Where the mains total water hardness exceeds 200 parts per million, provision should be made to treat the feed water to water heaters and the hot water circuit of combination boilers to reduce the accumulation of limescale.'

To maintain the performance of the Thermal Store water heater and in order to comply with this regulation the hardness of the mains water should be checked by the installer and if necessary fit a proprietary scale reducer or water softener to the cold water supply, refer to the manufacturers instructions for installation for guidance.

Please consult the local water authority for additional advice on water quality if required.

INHIBITOR

The use of a corrosion inhibitor is recommended to prolong the performance and efficiency of the Thermal Store. Checking the concentration of corrosion inhibitor in the Thermal Store is essential, dose appropriately according to the size of the Thermal Store volume in accordance with the inhibitor manufacturer's guidelines.

Please refer to BS 7593:2006 Code of practice for treatment of water in domestic hot water central heating systems.

PIPE FITTINGS

The cold feed is made via 22mm copper pipe spigot. Primary coil pipe fittings are made via 22mm compression fittings directly to the unit. The fittings are threaded 3/4"BSP male parallel, should threaded pipe connections be required.

COLD FEED

A 22mm cold water supply is recommended, however, if a 15mm (1/2") supply exists, which provides sufficient flow, this may be used (although more flow noise may be experienced).

A stopcock or servicing valve should be incorporated into the cold water supply to enable the Thermal Store and its associated controls to be isolated and serviced.

OUTLET

The hot water outlet is a 22mm compression fitting located at the thermostatic mixer valve (TMV2). Hot water distribution pipework should be 22mm pipe with short runs of 15mm pipe to terminal fittings such as sinks and basins. Pipe sizes may vary due to system design.

The Thermal Store can be used with most types of terminal fittings. It is advantageous in many mixer showers to have balanced hot and cold water supplies. In these instances a balanced pressure cold water connection should be placed between the cold water supply inlet and Thermal Store cold feed connection. A minimum distance of 2 mtrs to the first cold water draw off-take must be observed (see Fig. 4, page 8). Outlets situated higher than the thermal Store will give outlet pressures lower than that at the heater, a 10m height difference will result in a 0.1MPa (1 bar) pressure reduction at the outlet. All fittings, pipework and connections must have a rated pressure of at least 0.5MPa (5 bar) at 80°C.

DOMESTIC HOT WATER BACK EXPANSION

During a heating cycle the expansion of water in the DHW heat exchanger must be accommodated. Expansion back into the mains may not always be possible. (For example, a double check valve may be fitted in the mains supply). If required the minimum expansion vessel size recommended is 1ltr. This must be fitted upstream of the DHW exchanger as shown in the schematic. (Figure 4, Page 8)

Any method or product used for accommodating the expansion must comply with the Water Regulations and relevant standards.

MANUAL HANDLING GUIDANCE

The appliance exceeds the recommended weight for a one man lift. Upon installation it will be necessary to get assistance when lifting or manoeuvring the product into place. Use of mechanical lifting aids may be necessary.

DO NOT LIFT THE APPLIANCE BY THE ATTACHED PIPEWORK OR ANCILLARY COMPONENTS.

SITING THE UNIT

The Thermal Store must be vertically floor mounted. Although location is not critical, the following points should be considered:

- The Thermal Store should be sited to ensure minimum dead leg distances, particularly to the point of most frequent use.
- Avoid siting where extreme cold temperatures will be experienced. All exposed pipe work should be insulated.
- Access to associated controls and immersion heaters must be available to provide for the servicing and maintenance of the system. Where these controls are installed against a wall a minimum distance of 300mm must be left (see Fig. 3).
- For the autofill versions a minimum distance of 225mm must be left free above the unit in order to comply with the access requirements of the water regulations. This requirement is for replacement of the ball float valve if necessary.
- Ensure that the floor area for the Thermal Store is level and capable of permanently supporting the weight when full of water. (see Table 1, Page 3)

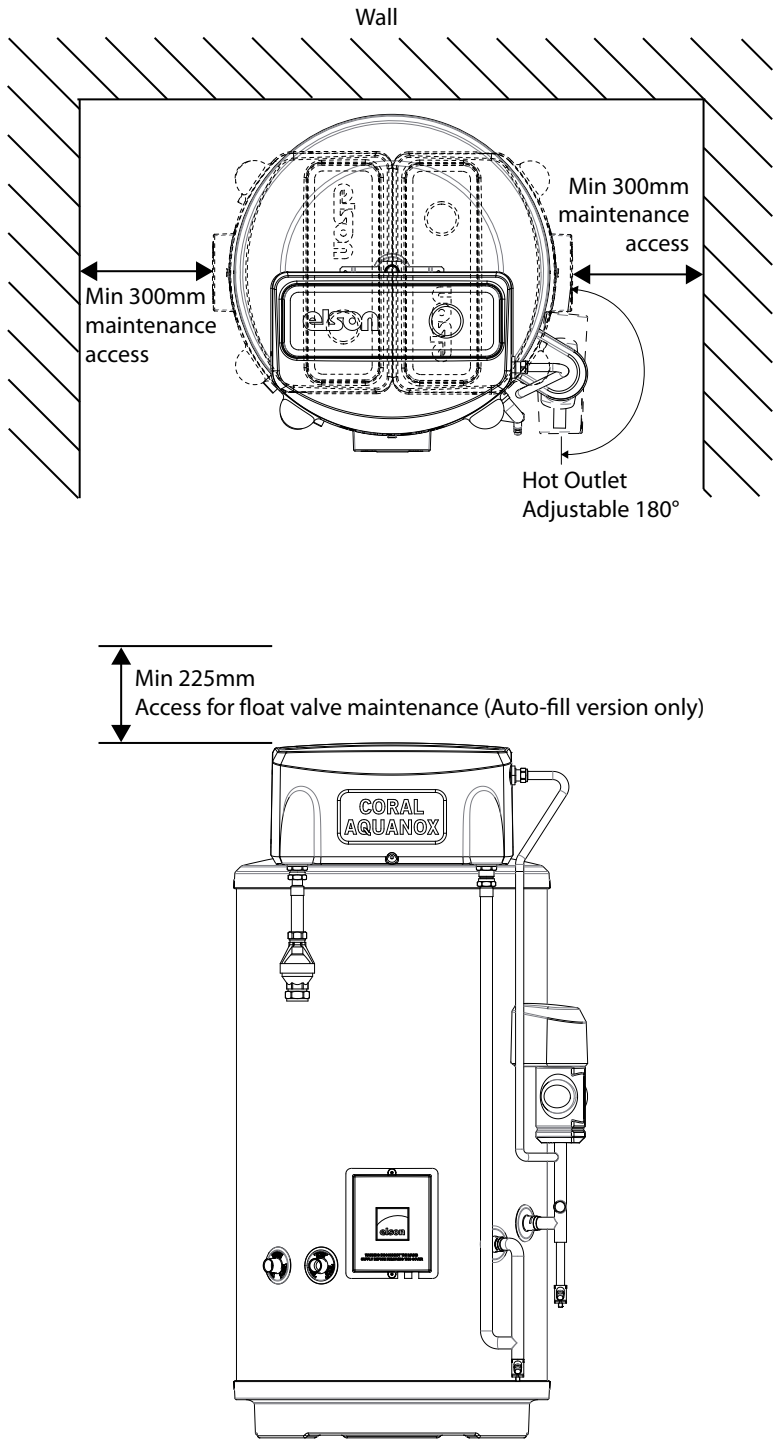
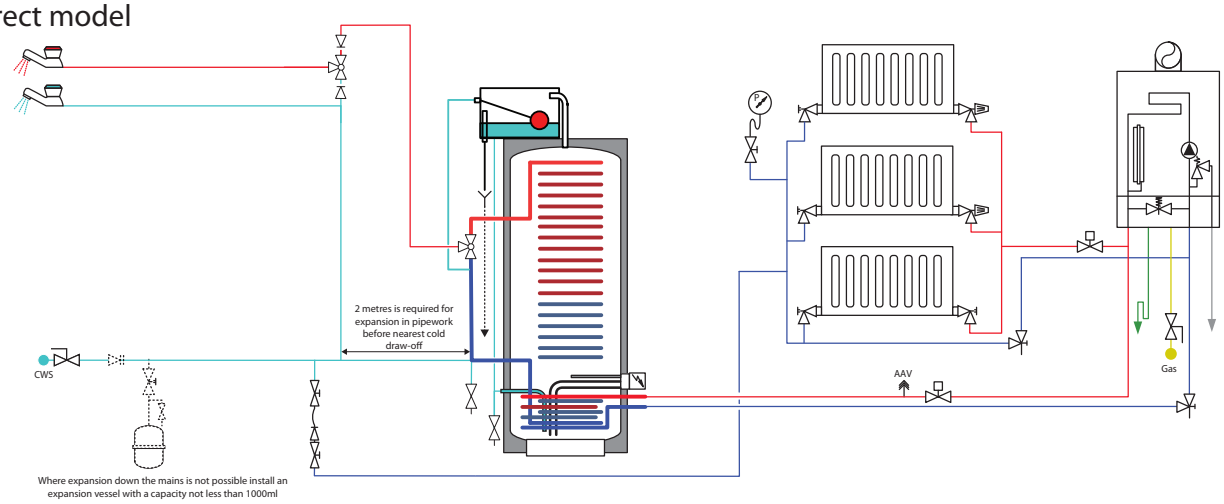
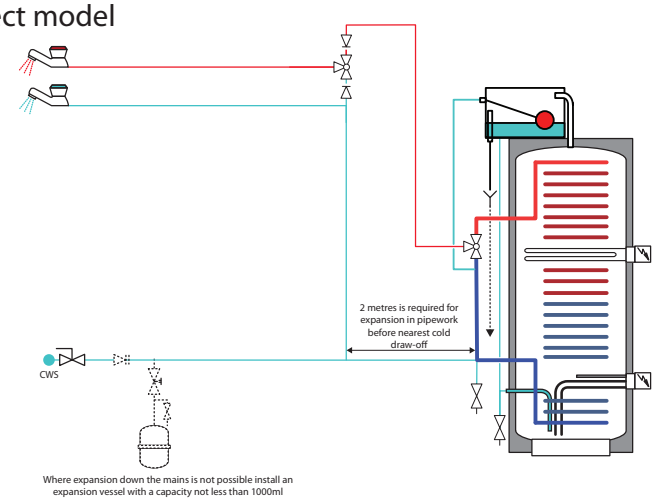


Fig. 3: Siting the Unit

Indirect model


2 metres is required for expansion in pipework before nearest cold draw-off
CWS
AAV
Gas
Where expansion down the mains is not possible install an expansion vessel with a capacity not less than 1000ml

Direct model


2 metres is required for expansion in pipework before nearest cold draw-off
CWS
Where expansion down the mains is not possible install an expansion vessel with a capacity not less than 1000ml

Key

Pump	
Single Check Valve	
Double Check Valve	
Thermostatic Mixing Valve	
Pressure Reducing Valve	
Isolation Valve	

Lock Shield Valve
Drain Cock
Strainer
Double Reg. Valve
Angle pattern Drain Cock
Expansion Vessel

Flow Setter
Automatic Bypass Valve
Safety Valve
T & P Valve
Automatic Air Vent
2 Port Motorised Valve

Thermostatic Radiator Valve
Radiator Lock Shield Valve
Filling Loop
Flexible Connection
Flow Meter
Stop Cock

Combined Isolation & Check Valve with Thermometer
Pressure Gauge Assembly
Air Separator
Tundish
Temperature Sensor

Aqua Stat
Room Stat
Programmer
Anti-Gravity Dip
Safety Discharge Vessel
Immersion Heater

The hydraulic schematics within this document are for guidance only and do not constitute system design. Some components may not be detailed for clarity purposes.

Fig. 4: Technical Hydraulic Schematics

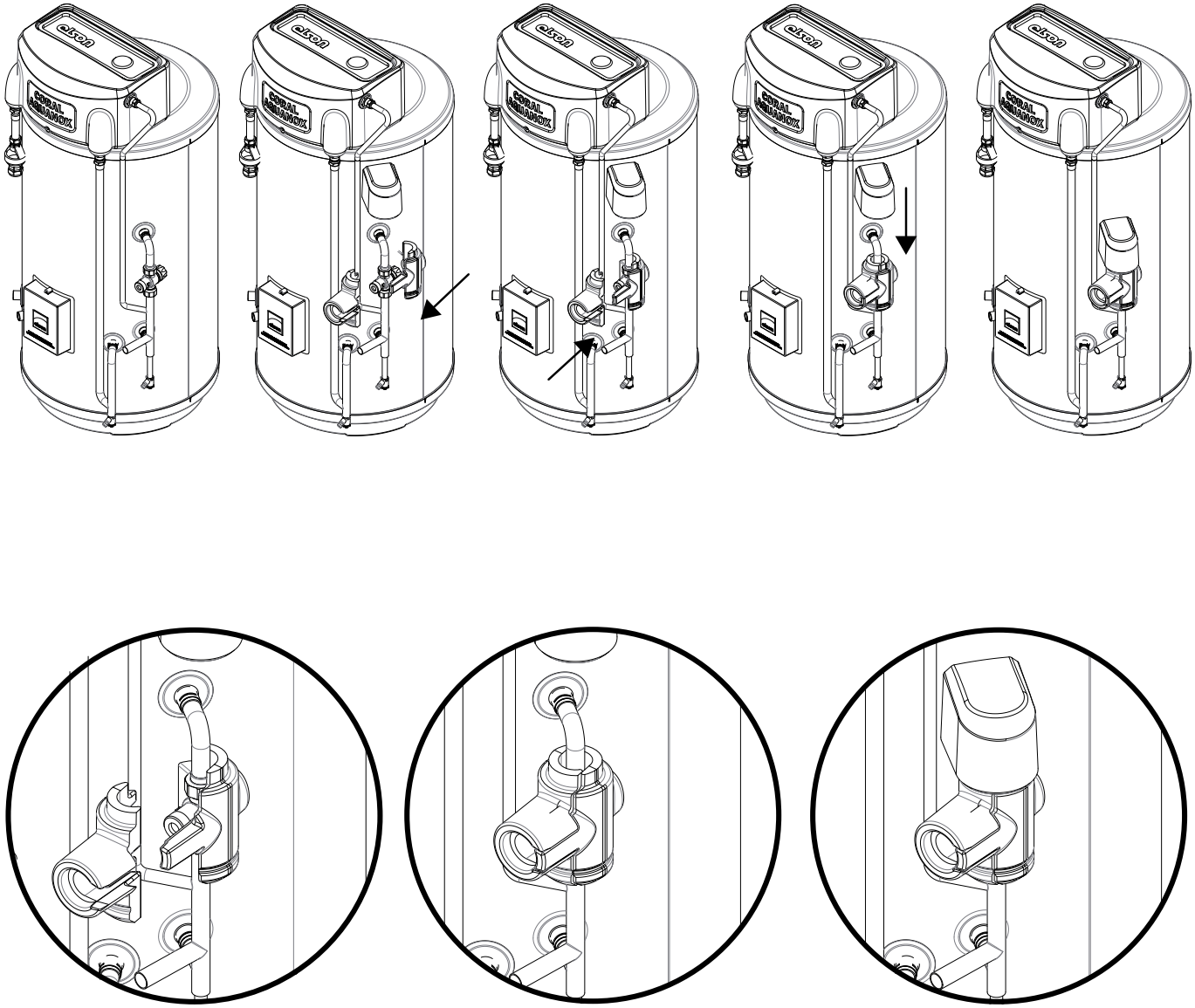


Fig. 5: Blending Valve Insulation

INSTALLATION - DIRECT

SAFETY

DISCONNECT FROM THE MAINS ELECTRICAL SUPPLY BEFORE REMOVING ANY COVERS.

Never attempt to replace the immersion heater(s) other than with the recommended immersion heater(s).

DO NOT BYPASS THE THERMAL CUT-OUT(S) IN ANY CIRCUMSTANCES. Ensure the two male spade terminations from the combined thermostat and thermal cut-out are pushed firmly onto the terminations on the element plate assembly.

(See Fig. 6)

In case of difficulty contact service support; contact details available at the back of this booklet.

ELECTRICAL SUPPLY

All electrical wiring should be carried out by a competent electrician and be in accordance with the latest I.E.E Wiring Regulations.

Each circuit must be protected by a suitable fuse and double pole isolating switch with a contact separation of at least 3mm in both poles.

The immersion heater(s) should be wired in accordance with Fig 6. The immersion heater(s) MUST be earthed. The supply cable should be 1.5mm² 3 core flexible cable H05BN4-F to BS EN 50525-2-21:2011 and must be routed through the cable grip provided with the outer sheath of the cable firmly secured by tightening the screws on the cable grip.

DO NOT operate the immersion heaters until the cylinder has been filled with water.

Ensure the thermostat and thermal cut-out sensing bulbs are pushed fully into the pockets on the element plate assembly.

PLUMBING CONNECTIONS

Direct Thermal Stores require the following pipework connections.

- Cold water supply to and from inlet.
- Outlet to hot water draw off points.
- Discharge pipework from visual indicator.

All connections are 22mm compression. However, 3/4”BSP parallel threaded fittings can be fitted to the primary coil connections if required.

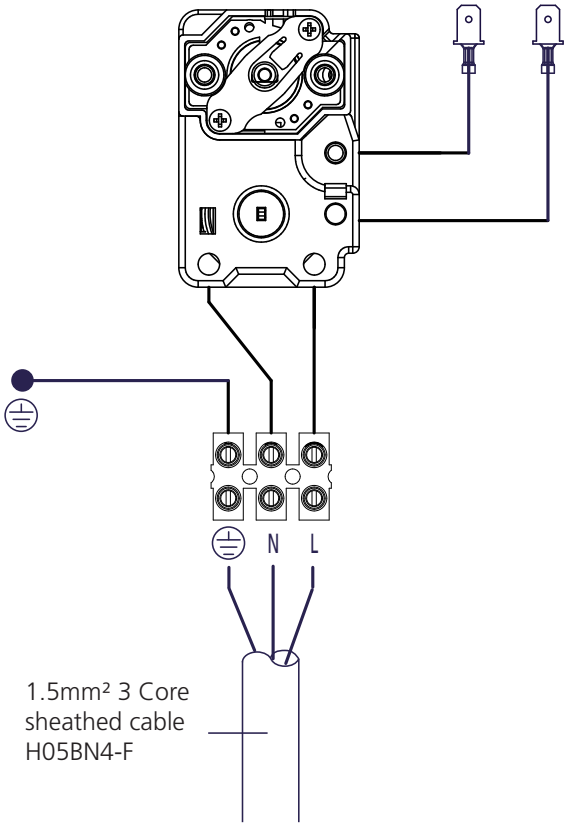


Fig. 6: Electrical connections (direct schematic)

INSTALLATION - INDIRECT

SAFETY

DISCONNECT FROM THE MAINS ELECTRICAL SUPPLY BEFORE REMOVING ANY COVERS.

Never attempt to replace the immersion heater(s) other than with the recommended authorised immersion heater(s).

DO NOT BYPASS THE THERMAL CUT-OUT IN ANY CIRCUMSTANCES. Ensure the two male spade terminations from the combined thermostat and thermal cut-out are pushed firmly onto the corresponding terminations on the element plate assembly. (See Fig. 7)

In case of difficulty contact service support; contact details available at the back of this booklet.

ELECTRICAL SUPPLY

All electrical wiring should be carried out by a competent electrician and be in accordance with the latest I.E.E Wiring Regulations.

Each circuit must be protected by a suitable fuse and double pole isolating switch with a contact separation of at least 3mm in both poles.

The immersion heater should be wired in accordance with Fig 7. The immersion heater MUST be earthed. The supply cable should be 1.5mm^2 3 core flexible cable H05BN4-F to BS EN 50525-2-21:2011 and must be routed through the cable grip provided with the outer sheath of the cable firmly secured by tightening the screws on the cable grip.

DO NOT operate the immersion heaters until the cylinder has been filled with water.

Ensure the thermostat and thermal cut-out sensing bulbs are pushed fully into the pockets on the element plate assembly.

PLUMBING CONNECTIONS

Indirect Thermal Stores require the following pipework connections.

- Cold water supply to and from inlet.
- Outlet to hot water draw off points.
- Discharge pipework from visual indicator.
- Connection to the primary circuit.

All connections are 22mm compression. However, 3/4”BSP parallel threaded fittings can be fitted to the primary coil connections if required.

BOILER SELECTION

The boiler should have a control thermostat and non self-resetting thermal cut-out and be compatible with thermal storage water heaters.

Where use of a boiler without a thermal cut-out is unavoidable a “low head” open vented primary circuit should be used. The feed and expansion cistern head above the Thermal Store should not exceed 2.5m.

PRIMARY CIRCUIT CONTROL

A motorised valve MUST be fitted on the primary flow to the cylinder heat exchanger and wired in series with the indirect control thermostat and thermal cut-out fitted to the unit.

Primary circulation to the Thermal Store heat exchanger must be pumped; gravity circulation WILL NOT WORK.

SPACE AND HEATING SYSTEMS CONTROLS

Controls will be required ensure the safe operation of the unit within the central heating system. Other controls will be necessary to control the space heating requirements and times that the system is required to function, see Fig. 9 below.

The Thermal store is compatible with most heating controls, examples of electrical circuits are shown in Figs. 8 and 9 (Page 12). However, other systems may be suitable, refer to the controls manufacturers’ instructions, supplied with the controls selected, for alternative system wiring schemes.

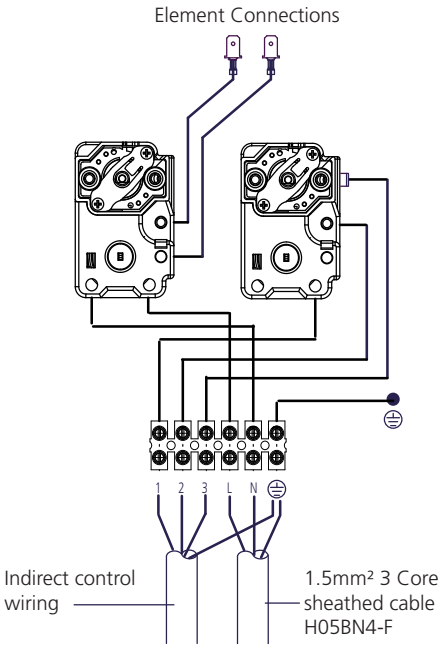
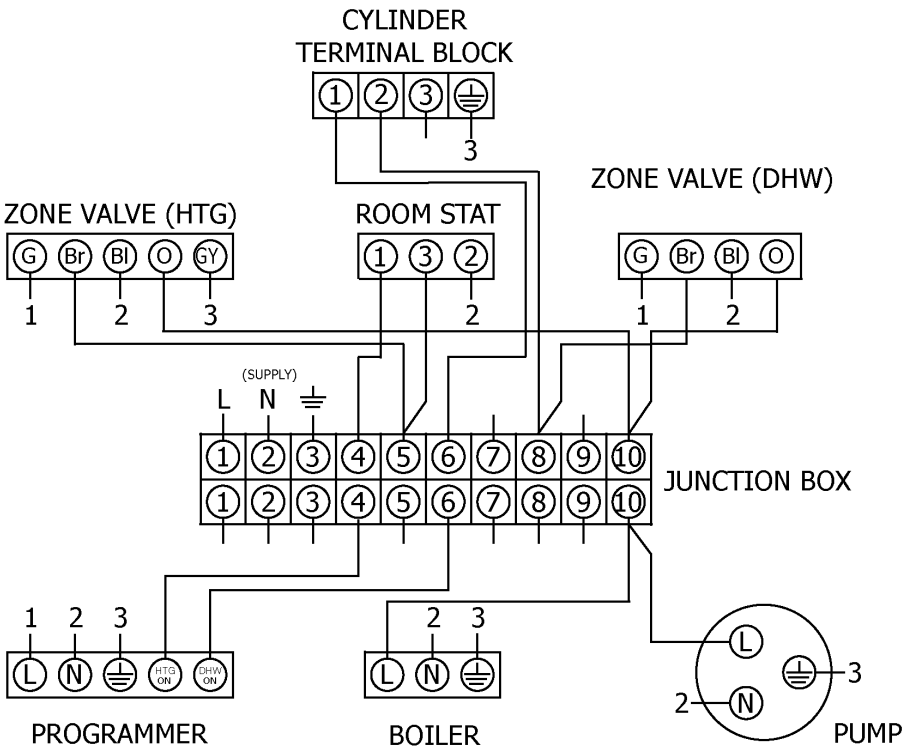


Fig. 7: Electrical connections (indirect schematic)



NOTES:
CONTROL TERMINAL NUMBERING MAY DIFFER FROM THOSE SHOWN.
REFER TO INSTRUCTIONS WITH CONTROLS SELECTED.
A DOUBLE POLE ISOLATING SWITCH MUST BE INSTALLED IN THE MAINS SUPPLY.
ALL EARTH CONNECTIONS MUST BE CONNECTED BACK TO THE MAINS EARTH SUPPLY.

Fig. 8: Schematic wiring diagram - Basic 2 x 2 port valve system

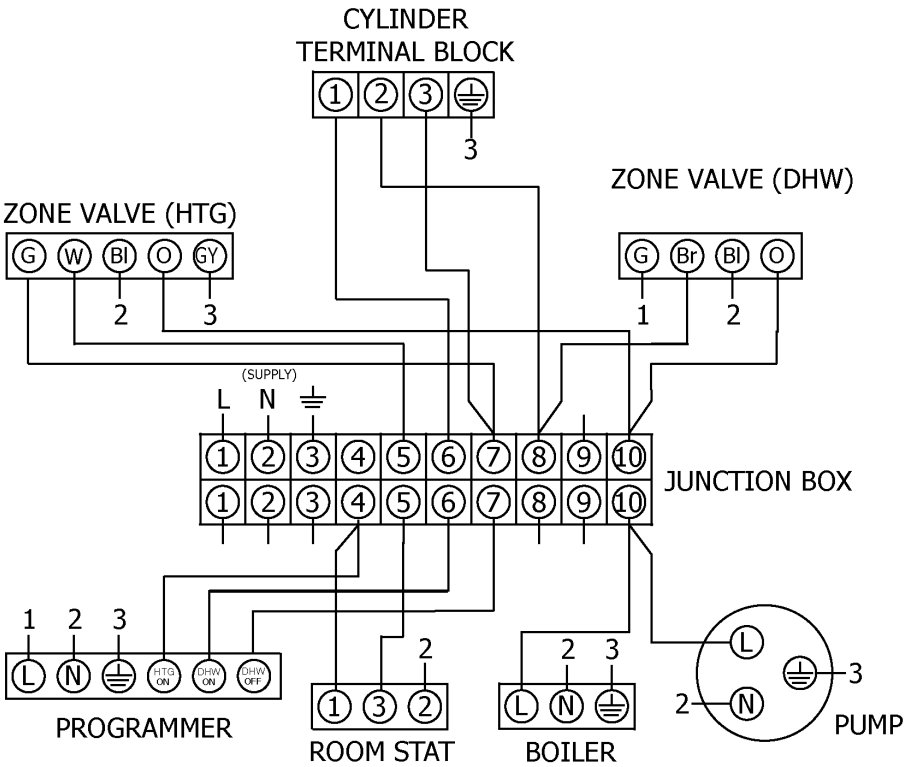


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Fig. 9: Schematic wiring diagram - 3 port mid position valve system. N.B. Must be used in conjunction with 2 port zone valve supplied

MANUAL FILL VERSION

MANUAL FILL

The store is provided with a flexible temporary filling loop which MUST be disconnected after installation to comply with the requirements of the Water Supply (Water Fittings) Regulations 1999.

The feed & expansion header tank water level should be checked regularly. If required fill with clean cold water via the filling loop to the appropriate level as shown on the sight glass. Do not overfill the tank. Ensure that the header tank lid is securely replaced, this reduces the amount of water lost through evaporation during operation.

If the level in the feed and expansion tank should drop between services, the flexible filling loop should be attached and the valve opened to let water slowly into the header tank. This should be filled to the line indicated on the side of the units header section. The filling loop should then be disconnected.

In the event of leak the only water that can be lost is the water held within the Thermal Store at that time.

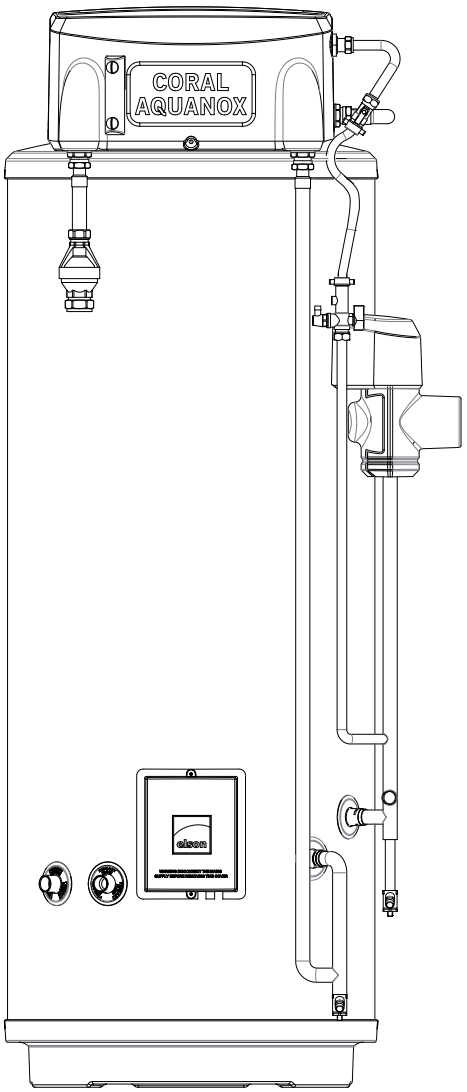


Fig. 10: Manual fill Version

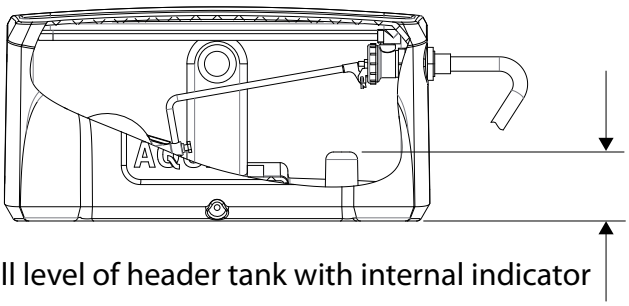


Fig. 11: Autofill Water Level

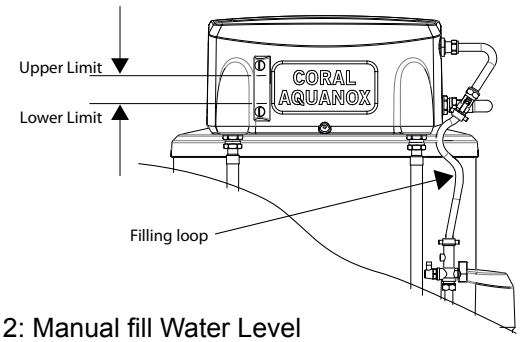


Fig. 12: Manual fill Water Level

COMMISSIONING

FILLING THE UNIT WITH WATER

Ensure that all fittings and immersion heaters are correctly fitted and tightened. An immersion heater key is provided to aid tightening the immersion heater(s)

AUTO FILL UNIT

- Check all connections for tightness including the immersion heater(s). An immersion heater key spanner is supplied for this purpose.
- Ensure that both drain cocks are CLOSED.
- Open a hot tap furthest from the Thermal Store.
- Open the mains stop cock to fill the unit. When water flows from the tap, allow to run for a few minutes to thoroughly flush through any residue, dirt or swarf, then close the tap.
- Open successive hot taps to purge the system of air.
- The Thermal Store will continue to fill via the ball valve located in the feed & expansion header tank. This will stop when the cylinder store is full.
- Set the level of water in the cistern by adjusting the height of the ball float using the internal water height gauge as shown in Fig.11 page 13.

MANUAL FILL UNIT

- Check all connections for tightness including the immersion heater(s). An immersion heater key spanner is supplied for this purpose.
- Ensure that both drain cocks are CLOSED.
- Open a hot tap furthest from the Thermal Store.
- Open the mains stop cock to fill the unit. When water flows from the tap, allow to run for a few minutes to thoroughly flush through any residue, dirt or swarf, then close the tap.
- Open successive hot taps to purge the system of air.
- The 'filling loop' is used for introducing mains water into the cylinder for filling and topping up purposes. The 'filing loop' has an isolating valve at each end. To introduce water into the system, undo one of these valves completely and gently open the other valve to control the rate of flow of water into the cylinder. Introduce water until the sight gauge on the feed & expansion tank is level with the bottom fill line as shown in Fig.12 page 13. Turn both valves off fully. The temporary filling loop should be disconnected after installation to comply with the requirements of the Water Supply (Water Fittings) Regulations 1999
- The feed & expansion header tank water level should be checked regularly. If required fill with clean cold water via the filling loop to 'top up'.

SYSTEM CHECKS

Upon commissioning a competent engineer should:

- Check all water connections for leaks and rectify as necessary.
- Check water pressure – maximum 5.0bar
- Check operation of all service valves
- Check operation of the blending valve and test that the water temperature (hot flow mix) is at 55°C when the store temperature is operating at 75°C.
- Check operation of the immersion heater thermostats and settings.

Complete the service record at the back of the commissioning booklet provided to comply with the manufacturers guarantee and Benchmark requirements.

DIRECT UNIT

Switch on electrical supply to the immersion heater(s) and allow the cylinder to heat up to normal working temperature (75°C recommended, approximately graduation 4 on the thermostat). If necessary the temperature can be adjusted by inserting a flat bladed screwdriver in the adjustment knob on top of the immersion heater thermostat and rotating. The adjustment range 1 to 5 represents a temperature range of 37°C to 85°C. Check the operation of thermostat(s).

INDIRECT UNIT

Fill the indirect (primary) circuit following the boiler manufacturer's commissioning instructions. To ensure the cylinder primary heat exchanger is filled, the 2 port motorised valve should be manually opened by moving the lever on the motor housing to the MANUAL setting. When the primary circuit is full return the lever to the AUTOMATIC position.

Switch on the boiler, ensure the programmer is set to Domestic Hot Water and allow the cylinder to heat up to a normal working temperature (75°C recommended, approximately graduation 5 on the thermostat). If necessary the temperature can be adjusted by inserting a flat bladed screwdriver in the adjustment knob and rotating. The minimum thermostat setting is 12°C.

The adjustment range 1 to 5 represents a temperature range of 37°C to 85°C.

Check the operation of the indirect thermostat and motorised valve during the heating cycle.

BENCHMARK LOG BOOK

On completion of the installation and commissioning procedures detailed in this manual the Benchmark "Installation, Commissioning and Service Record Log, pages 26 and 27 should be completed and signed off by the competent installer or commissioning engineer in the relevant sections. The various system features, location of system controls, user instructions and what to do in the event of a system failure should be explained to the customer. The customer should then countersign the Benchmark™ commissioning checklist (page 26) to accept completion. The Service Record should be filled in when any subsequent service or maintenance operation is carried out on the product.

USER INSTRUCTIONS

WARNINGS

IF STEAM DISCHARGES FROM THE OVERFLOW VISUAL INDICATOR SHUT DOWN THE BOILER OR IMMERSION HEATER(S). DO NOT TURN OFF ANY WATER SUPPLY. CONTACT A COMPETENT INSTALLER FOR WATER HEATERS TO CHECK THE SYSTEM.

IF A FAULT IS SUSPECTED CONTACT A COMPETENT INSTALLER.

FLOW PERFORMANCE

When initially opening hot outlets a small surge in flow may be noticed as pressures stabilise. This is quite normal with hot water systems. In some areas cloudiness may be noticed in the hot water. This is due to aeration of the water, is quite normal and will quickly clear.

TEMPERATURE CONTROLS – DIRECT UNIT IMMERSION HEATER(S)

A combined adjustable thermostat and thermal cut-out is provided for each immersion heater. The thermostat is factory set to give a water storage temperature of approx. 75°C. Access to the thermostat can be made by opening the immersion heater cover - DISCONNECT THE ELECTRICAL SUPPLY BEFORE OPENING THE COVER(S). Temperature adjustment is made by inserting a flat bladed screwdriver in the slot on the adjustment spindle on top of the thermostat and rotating. The adjustment range 1 to 5 represents a temperature range of 37°C to 85°C (75°C will be approximately position 4). If in any doubt contact a competent electrician.

DO NOT bypass the thermal cut-out(s) in any circumstances.

TEMPERATURE CONTROLS - INDIRECT UNIT

The Thermal Store units are fitted with an indirect control thermostat and thermal cut-out. These controls must be wired in series with the motorised zone valve to interrupt the flow of primary water around the heat exchanger coil when the control temperature has been reached. The controls are located within the terminal housing along with the immersion heater thermostat. The thermostat is factory set to give a water storage temperature of approx. 75°C. Access to the thermostat can be made by opening the terminal housing cover - DISCONNECT THE ELECTRICAL SUPPLY BEFORE OPENING THE COVER. Temperature adjustment is made by inserting a flat bladed screwdriver in the adjustment spindle and rotating. The minimum thermostat setting is 12°C. The adjustment range 1 to 5 represents a temperature range of 37°C to 85°C (75°C will be approximately position 4). If in any doubt contact a competent electrician.

An immersion heater is also provided for use should the indirect heat source be shut down for any reason. The immersion heater control temperature is set using the immersion heater thermostat.

DO NOT bypass the thermal cut-out(s) in any circumstances.

OPERATIONAL FAULTS

Operational faults and their possible causes are detailed in the Fault Finding section of this book. It is recommended that faults should be checked by a competent installer.

ELECTRIC TARIFFS

Direct units are designed to use predominantly low tariff electricity but with a boost switch during normal tariff periods. The thermal store is designed to heat water to 75°C. At this temperature performance is maintained with minimal heat loss, keeping running costs to a minimum.

BOOST ELEMENT

During periods of prolonged hot water draw-off or during cold weather conditions the use of the ‘boost’ element may be more common. If the inlet cold water temperature is very low more energy will be required to heat the store.

The boost element will ensure hot water delivery when the indirect heat store is not available for any reason.

HOLIDAY

It is safe to turn off the power to the Thermal Store and shut off the water supply if you go on holiday.

THE BENCHMARK SCHEME

Elsy & Gibbons is a licensed member of the Benchmark Scheme which aims to improve the standards of installation and commissioning of domestic heating and hot water systems in the UK and to encourage regular servicing to optimise safety, efficiency and performance.

Benchmark is managed and promoted by the Heating and Hotwater Industry Council. For more information visit www.centralheating.co.uk.

Please ensure that the installer has fully completed the Benchmark Checklist (Page 26) of this manual and that you have signed it to say that you have received a full and clear explanation of its operation. The installer is legally required to complete a commissioning checklist as a means of complying with the appropriate Building Regulations (England & Wales).

All installations must be notified to Local Area Building Control either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer who should, on receipt, write the Notification Number on the Benchmark Checklist.

This product should be serviced regularly to optimise its safety, efficiency and performance. The service engineer should complete the relevant Service Record on the Benchmark Checklist after each service.

The Benchmark Checklist may be required in the event of any warranty work.

MAINTENANCE

MAINTENANCE REQUIREMENTS

Thermal store hot water systems have a continuing maintenance requirement in order to ensure safe working and optimum performance.

The maintenance checks described below should be performed by a competent person on a regular basis, e.g. annually to coincide with boiler maintenance.

After any maintenance, please complete the relevant Service Interval Record section of the Benchmark Checklist on Page 27 of this document.

INSPECTION

The immersion heater boss can be used as an access for inspecting the cylinder internally. Ensure the unit is drained before removal of immersion heater.

DE-SCALING THE DHW EXCHANGER

The hot water heat exchanger may be de-scaled in the field by a qualified technician using a high pressure de-scaling pump and suitable acidic de-scaling chemical (e.g. Fernox DS3). The store must be cooled to between 30 and 40°C before commencing the de-scaling. This must be carried out by a skilled person because of the specialist equipment needed.

DE-SCALING IMMERSION HEATER(S)

Before removing the immersion heater(s) the unit must be drained. Ensure the water, electrical supply and boiler are OFF before draining. Attach a hosepipe to the drain cock having sufficient length to take water to a suitable discharge point below the level of the unit. Open a hot tap close to the unit and open the drain cock to drain the unit.

DIRECT UNITS

Switch on electrical supply to the immersion heater(s) and allow to heat up to normal working temperature (75°C recommended, approximately graduation 4 on the thermostat). If necessary the temperature can be adjusted by inserting a flat bladed screwdriver in the adjustment knob on top of the immersion heater thermostat and rotating. The adjustment range 1 to 5 represents a temperature range of 12°C to 68°C. Check the operation of thermostat(s) and that no water has issued from the expansion relief valve or temperature/ pressure relief valve during the heating cycle.

INDIRECT UNITS

Open the cover(s) to the immersion heater housing(s) and disconnect wiring from immersion heater(s) thermostat(s). Remove thermostat by carefully pulling outwards. Remove thermostat capillary sensors from the pockets on the immersion heater. Unscrew immersion heater backnut(s) and remove immersion heater from the unit. A key spanner is supplied with the cylinder unit for easy removal/tightening of the immersion heater(s). Over time the immersion heater gasket may become stuck to the mating surface. To break the seal insert a flat bladed screwdriver into one of the pockets on the immersion heater and gently lever up and down.

Carefully remove any scale from the surface of the element(s). DO NOT use a sharp implement as damage to the element surface could be caused. Ensure sealing surfaces are clean and seals are undamaged, if in doubt fit a new gasket (part number 95 611 822).

Replace immersion heater(s) ensuring the lower (right angled) element hangs vertically downwards towards the base of the unit. It may be helpful to support the immersion heater using a round bladed screwdriver inserted into one of the thermostat pockets whilst the backnut is tightened. Replace thermostat capillaries into pocket. Replace the immersion heater thermostat by carefully plugging the two male spade terminations on the underside of the thermostat head into the corresponding terminations on the element. Rewire, check, close and secure immersion heater housing cover(s).

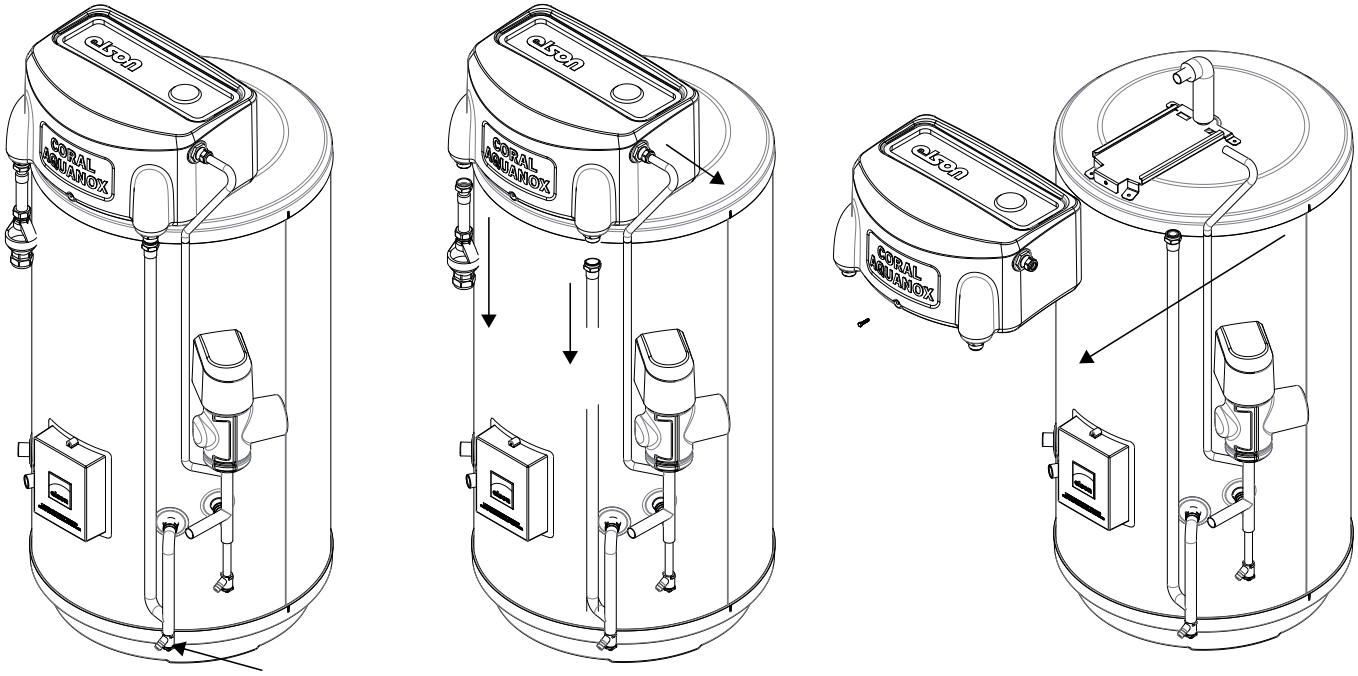
RE-COMMISSIONING

Check all electrical and plumbing connections are secure. Close the drain cock. With a hot tap open, turn on the cold water supply and allow unit to refill. DO NOT switch on the immersion heater(s) or boiler until the unit is full. When water flows from the hot tap allow it to flow for a short while to purge air and flush through any disturbed particles. Close the hot tap and then open successive hot taps in the system to purge any air. When completely full and purged check the system for leaks. The heating source (immersion heater(s) or boiler) can then be switched on.

INHIBITOR

The use of a corrosion inhibitor is required to maintain the performance and cylinder guarantee of the Thermal Store. Checking the concentration of the corrosion inhibitor in the Thermal Store is essential to prevent corrosion. Dose appropriately according to the size of the volume in accordance with the inhibitor manufacturer's guidelines.

Please refer to BS 7593:2006 Code of practice for treatment of water in domestic hot water central heating systems.

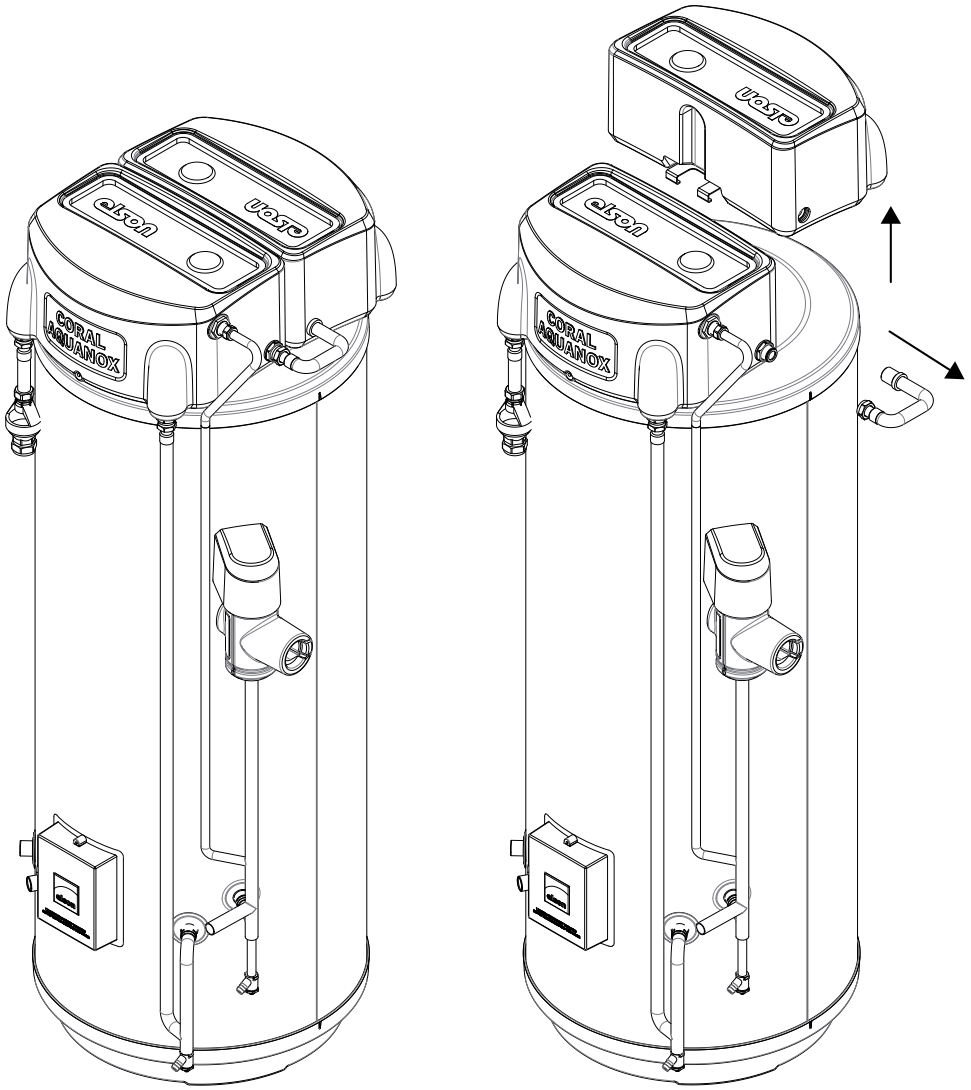


Step 1: Drain feed & expansion tank (note: drain tank only)

Step 2: Release feed & expansion tank pipe connections

Step 3: Remove feed & expansion tank fixing bolt & slide forwards to remove

Fig. 13: Header Tank Removal



Step 1: Drain feed & expansion tank (note: drain tank only)

Step 2: Release connection pipe, remove rear tank by unhooking and lifting

Fig. 13a: 210litre Header Tank Removal

PERFORMANCE

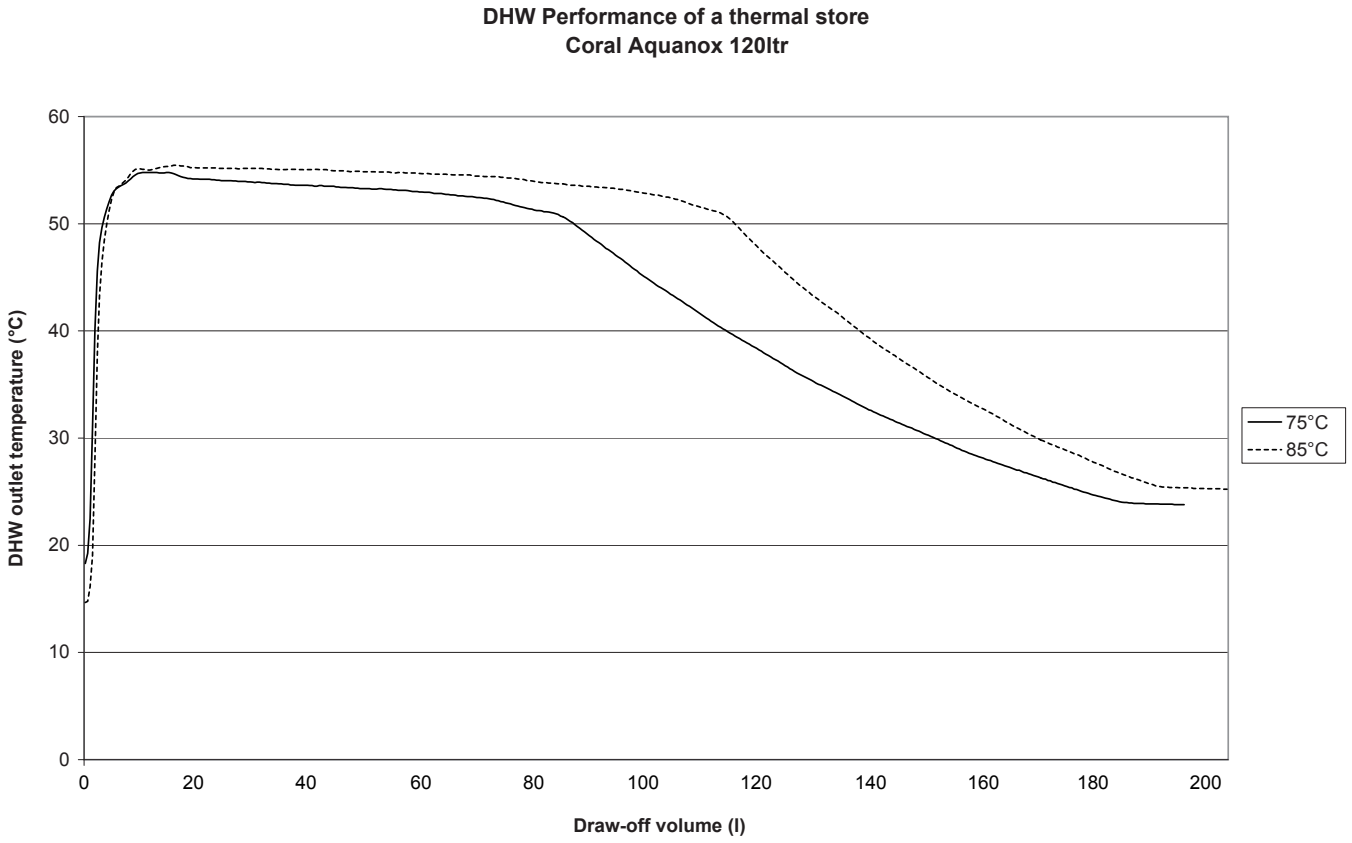


Fig. 14: 120ltr Hot Water Performance

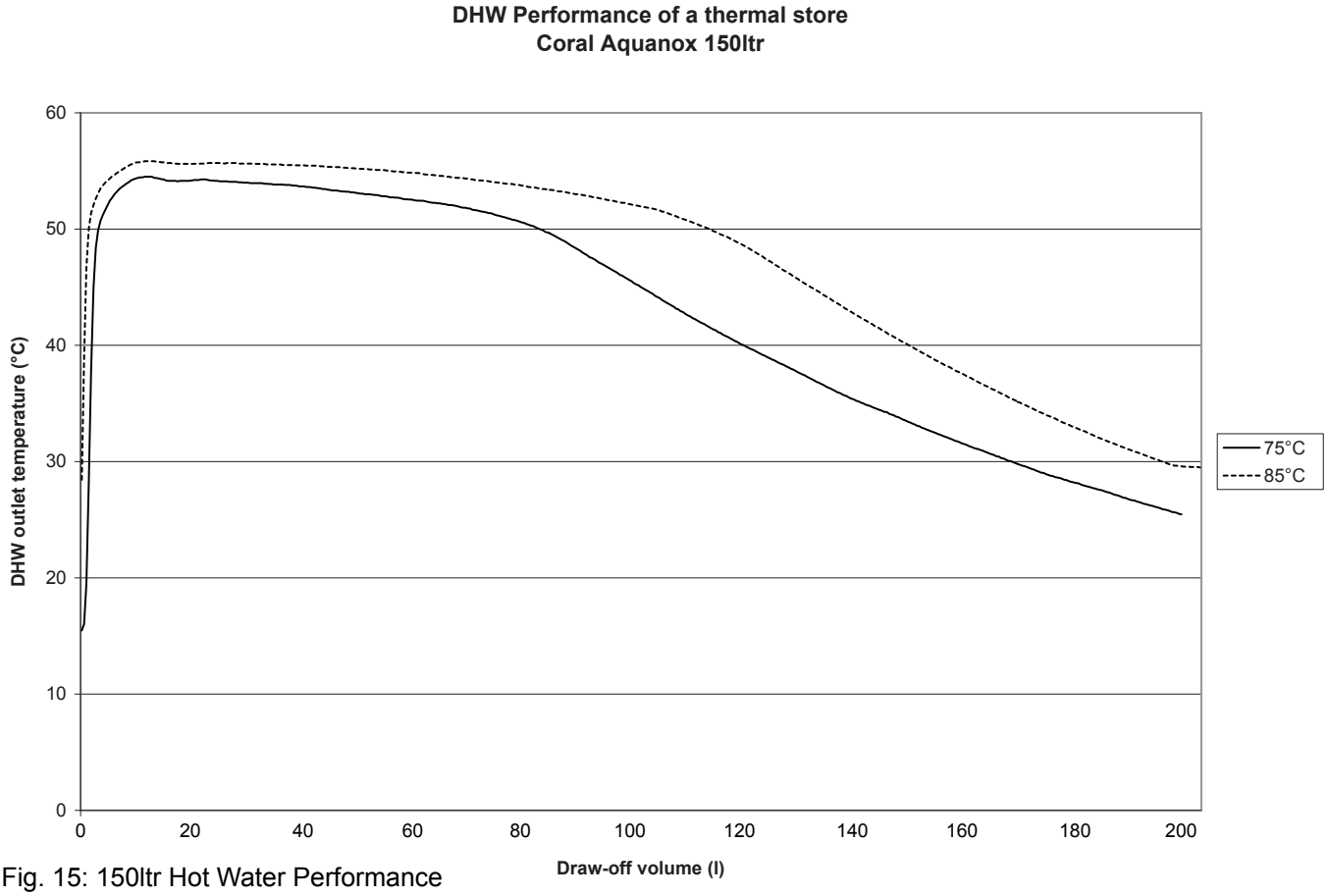


Fig. 15: 150ltr Hot Water Performance

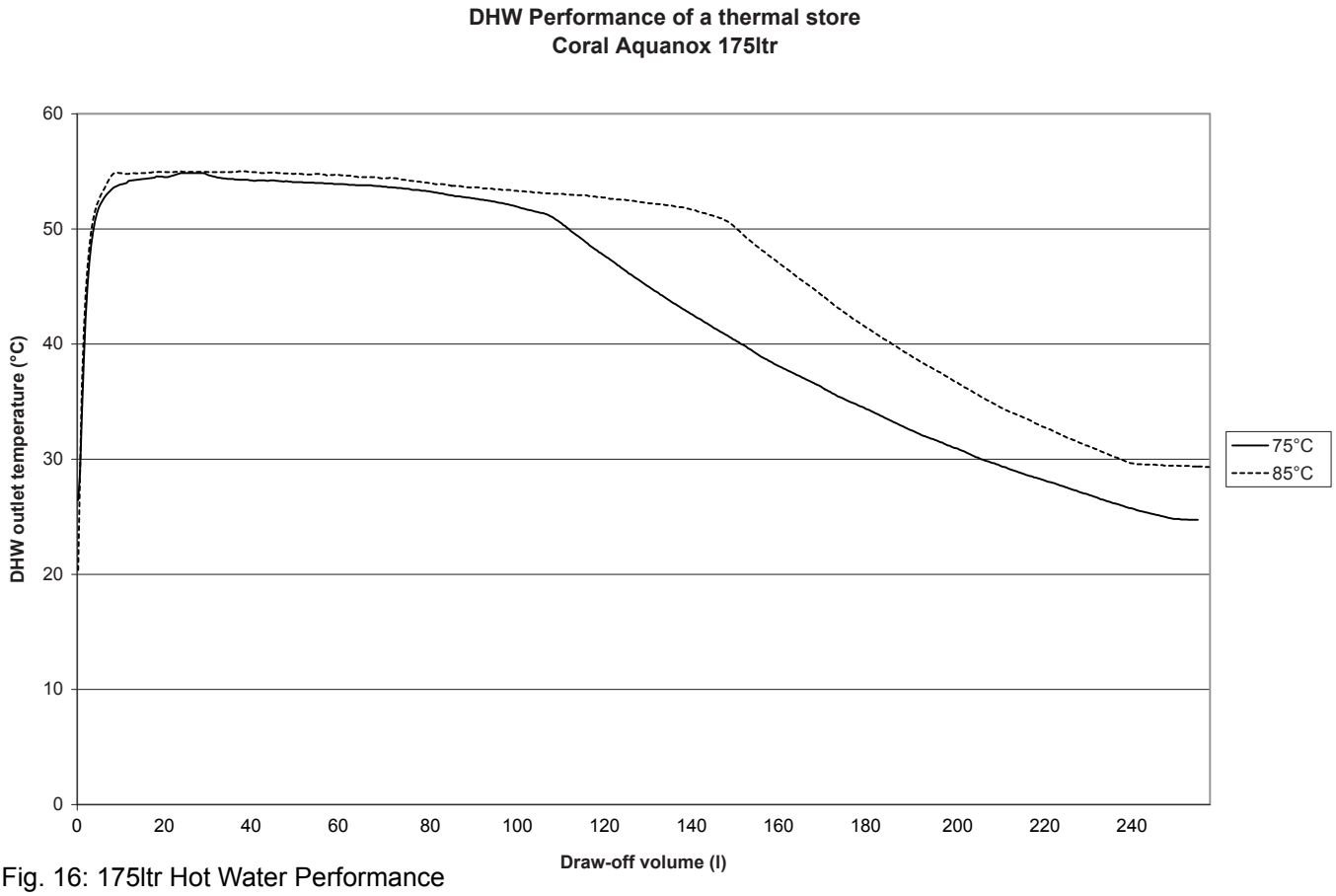


Fig. 16: 175ltr Hot Water Performance

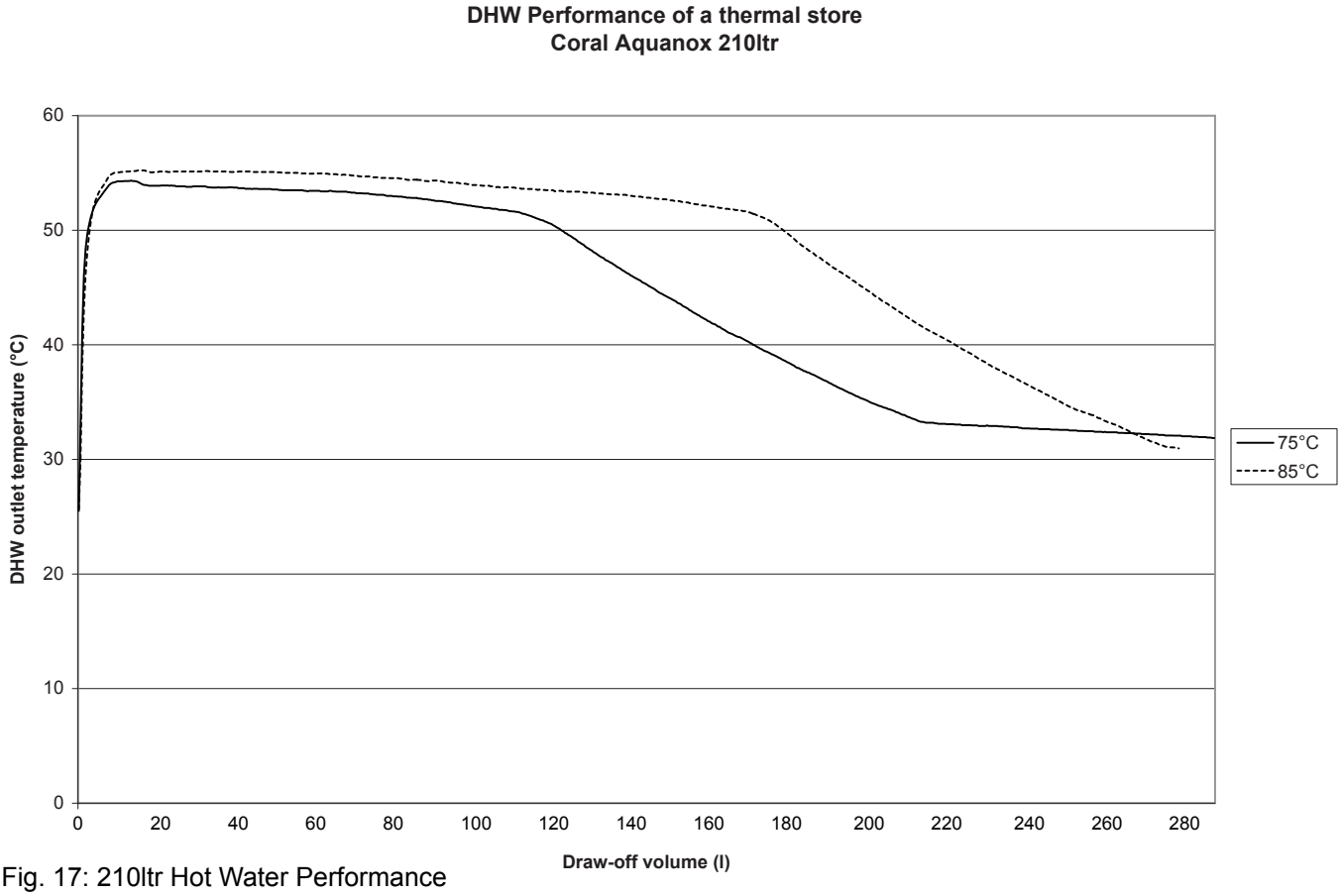


Fig. 17: 210ltr Hot Water Performance

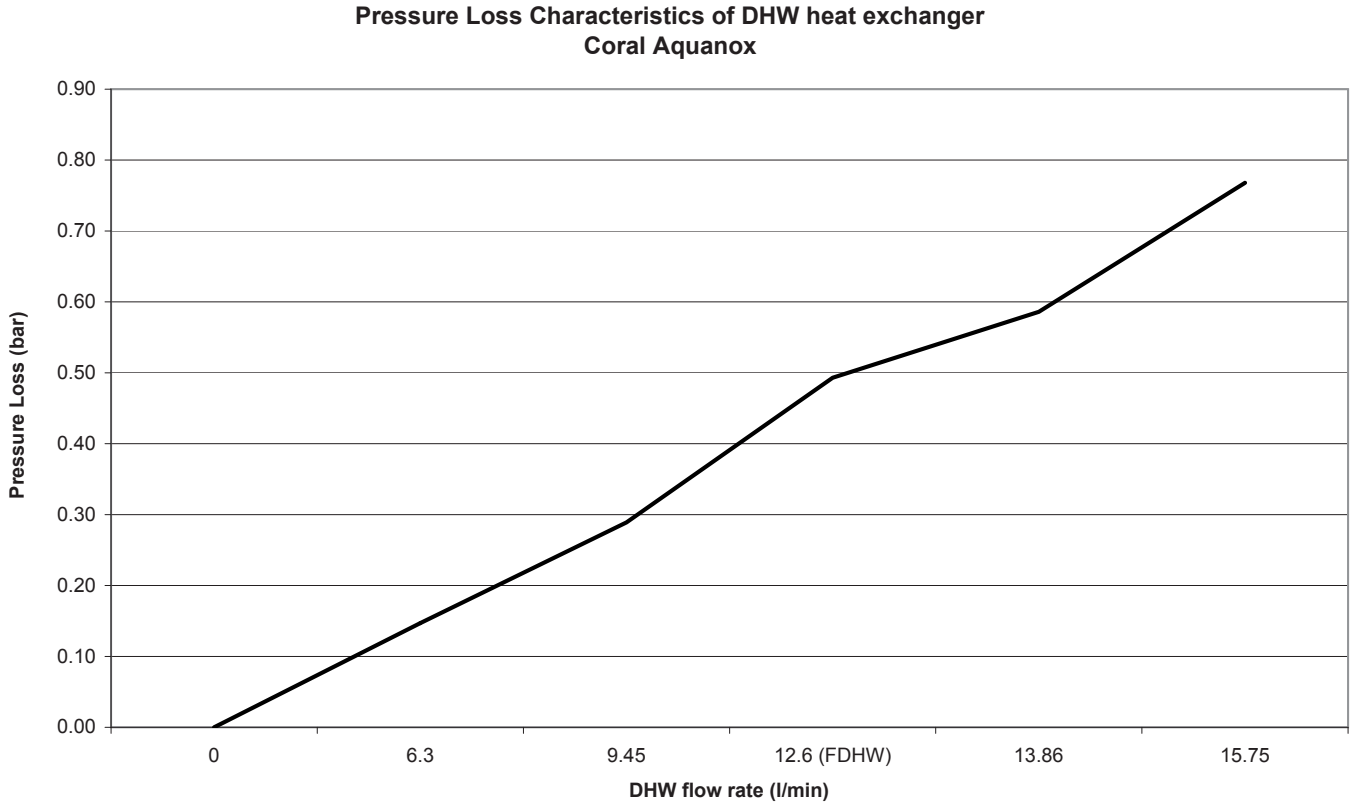


Fig. 18: Pressure Loss Characteristics: DHW Exchanger

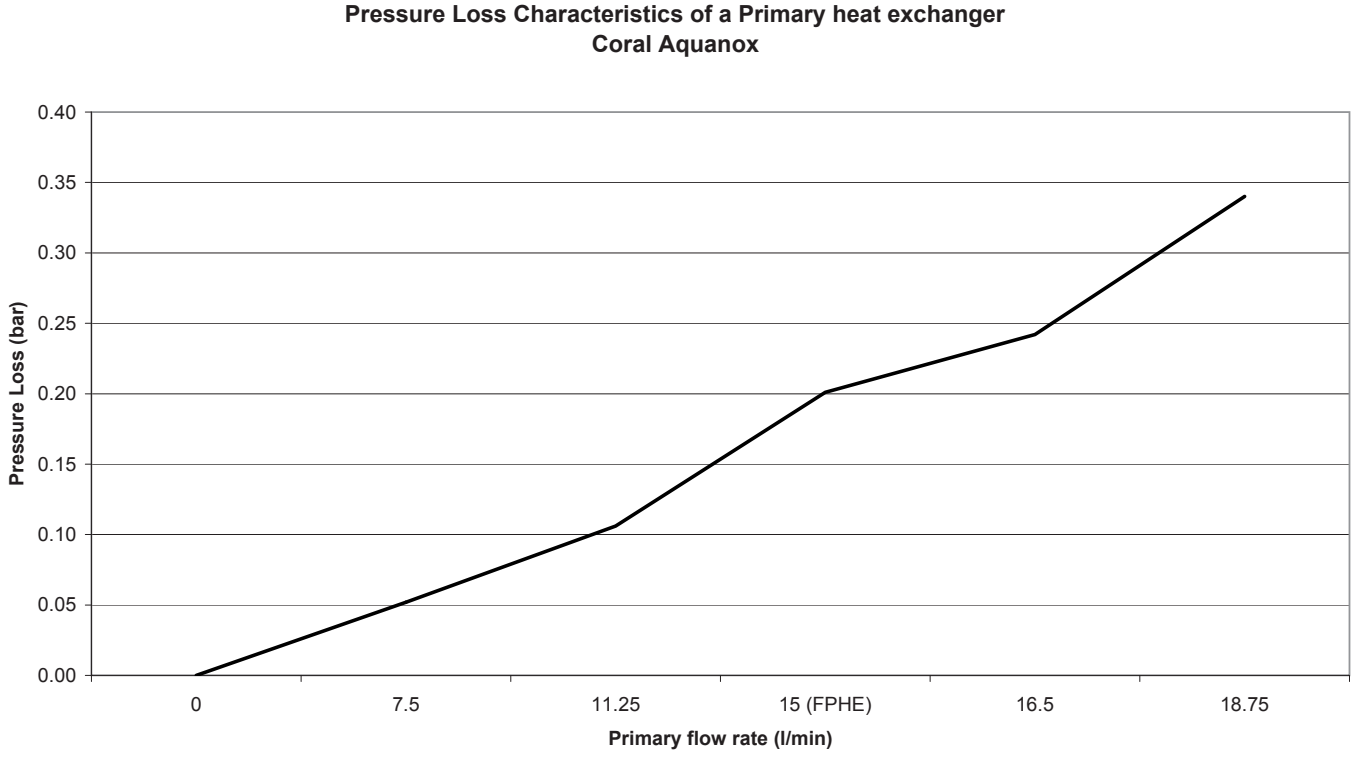


Fig. 19: Pressure Loss Characteristics: Primary Heat Exchanger

FAULT FINDING & SERVICING

IMPORTANT

- After servicing, complete the relevant Service Interval Record section of the Benchmark Checklist located on page 27 of this document.
- Servicing should only be carried out by competent persons in the installation and maintenance of water heating systems.
- Any spare parts used MUST be authorised Elson parts.
- Disconnect the electrical supply before removing any electrical equipment covers.
- NEVER bypass any thermal controls or operate system without the necessary safety controls.
- Water contained in the thermal store may be very hot, especially following a thermal control failure. Caution must be taken when drawing water from the unit.

SPARE PARTS

A full range of spare parts are available for the Thermal Store (Table 4 Page 22). Refer to the technical data label on the unit to identify the model installed and ensure the correct part is ordered. You will need to quote the serial number which is printed on the data label.

FAULT FINDING

The fault finding chart (Table 3) will enable operational faults to be identified and their possible causes rectified. Any work carried out on the thermal store and its associated controls MUST be carried out by a competent installer. In case of doubt contact service support (see contact details on back page).

Fault	Possible Cause	Remedy
No hot water flow	Mains water supply off	Check and open stop cock/isolating valve
Water from hot tap is cold	Direct immersion heater not switched on	Check and switch on
	Direct immersion heater thermal cut-out has operated	Check, reset by pushing button on thermal cut-out
	Indirect programmer set to central heating only	Check, set to domestic hot water programme
	Indirect boiler not working	Check boiler operation. If fault is suspected consult boiler manufacturer's instructions
	Indirect thermal cut-out has operated	Check, reset by pushing button on thermal cut-out Check operation of indirect thermostat
	Indirect motorised valve not connected correctly	Check wiring and/or plumbing connections to motorised valve
Water discharges from overflow visual indicator	INTERMITTENTLY	The water level of the feed & expansion tank has been set incorrectly. Occasional small discharge is normal and is generally due to condensation.
	CONTINUALLY	Check the operation of the ball float valve, inspect the float for leaks. Check the ball valve seat for damage.
		Isolate the ball float valve, if the water continues to discharge there may be a leak in the internal DHW heat exchanger coil.
Performance has detiorated	GRADUALLY	Check for scale build up in the DHW heat exchanger
	SUDDENLY	Check the operation of the blending valve.

Table 3: Fault Finding Chart

SPARES

The following comprehensive list of spare parts is available for your Elson Thermal Store water heater.

Please refer to the rating label on the Elson Thermal Store water heater before ordering to ensure the correct spare is obtained

Item Number	Description	Part Number
1	Terminal cover	95 614 095
2	Immersion heater backnut	95 607 869
3	Immersion heater gasket	95 611 822
4	Immersion heater (Bent)	95 606 984
5	Immersion heater (Straight)	95 606 986
6	Direct thermostat & thermal cut-out	95 612 057
7	Indirect thermostat & thermal cut-out	95 612 058
8	6 Way terminal block	95 607 933
9	3 Way terminal block	95 607 932
10	Visual indicator	95 607 367
11	Tank fittings assembly	95 607 368
12	F&E tank boss 3/4"	95 607 369
13	Pipe fittings assembly	95 607 676
14	Thermostatic mixing valve	95 605 089
15	Blending valve cover assembly (3pcs)	95 614 134
16	Copper float	95 607 677
17	Float valve	95 607 678
18	Feed & expansion tank lid	95 614 135
19	Grommet vent pipe	95 607 683
20	Immersion heater key spanner (not shown)	95 607 861
21	Sight glass (not shown)	95 614 136
22	Motorised 2 port valve (not shown)	95 605 049

Table 4: Spares Parts List

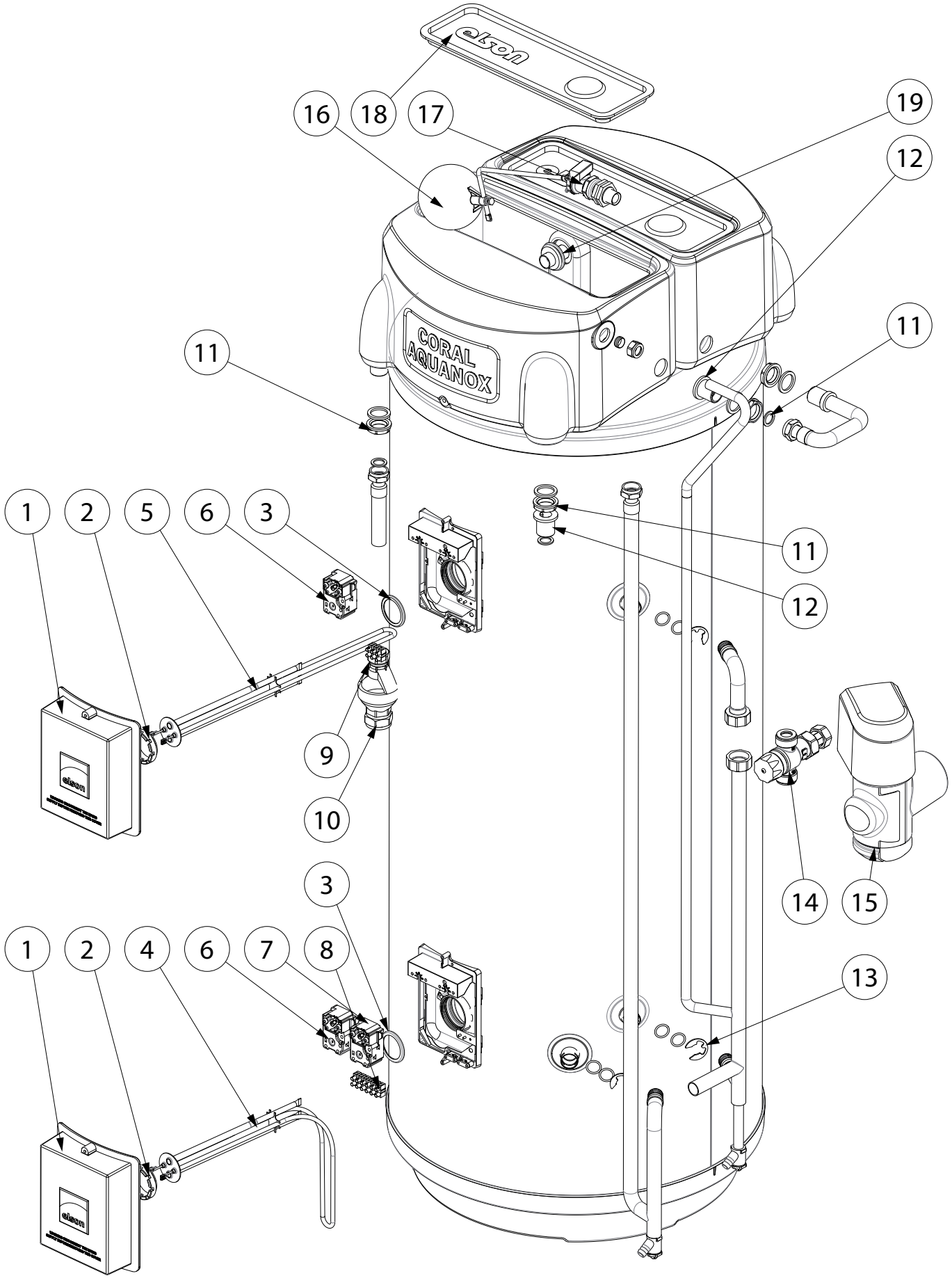


Figure 20: Exploded Spares Diagram

HEAT LOSS

Nominal Capacity (Litres)	Standing Heat Loss	
	per day (kWh/24h)	per year (kWh/365d)
120	1.26	460.54
150	1.46	531.59
175	1.61	586.86
210	1.80	655.28

Table 5: Standing heat losses

DESIGN

To minimise heat loss, a 60mm thick void-free layer of high-performance polyurethane foam fills the space between the inner vessel and outer casing for maximum insulation efficiency and compliancy with future European-wide legislation.

The Coral Aquanox is supplied with an innovative casing which insulates the blending valve. The carefully injection moulded one-piece insulation can be fitted after installation for ease of plumbing.

The base is fully insulated and the unit stands on three moulded feet to minimise heat loss to the supporting floor. Immersion heaters and controls are fully integrated with no large external bosses to radiate heat.

RECOMMENDATIONS

To minimise the standing heat loss it is recommended that all exposed hot water pipework is insulated. This will keep hot water hotter for longer and save energy.

ENVIRONMENTAL

Products are manufactured from many recyclable materials. At the end of their useful life they should be disposed of at a Local Authority Recycling Centre in order to realise the full environmental benefits.

Insulation is by means of an approved CFC/HCFC free polyurethane foam with an ozone depletion factor of zero.

NOTES

MAINS PRESSURE HOT WATER STORAGE SYSTEM COMMISSIONING CHECKLIST

This Commissioning Checklist is to be completed in full by the competent person who commissioned the storage system as a means of demonstrating compliance with the appropriate Building Regulations and then handed to the customer to keep for future reference.

Failure to install and commission this equipment to the manufacturer's instructions may invalidate the warranty but does not affect statutory rights.

Customer Name _____ Telephone Number _____

Address _____

Cylinder Make and Model _____

Cylinder Serial Number | | |

SERVICE RECORD

It is recommended that your hot water system is serviced regularly and that the appropriate Service Record is completed.

Service Provider
Before completing the appropriate Service Record below, please ensure you have carried out the service as described in the manufacturer's instructions.

SERVICE 1 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 2 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 3 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 4 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 5 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 6 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 7 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 8 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 9 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 10 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

Sales & Support

Guarantee

On site service support including parts and labour for 12 months from date of installation. After the initial 12 months, a guarantee will apply for a further four years for the stainless steel inner vessel only. During this four year period, in the event of a cylinder leak, a replacement product will be issued provided that the replacement is carried out by one of our heateam engineers, for which reasonable labour charges will apply.

The guarantee is valid provided that:

- It has been correctly installed as per the instructions contained in the instruction manual and all relevant Codes of Practice and Regulations in force at the time of installation.
- The Benchmark Checklist has been completed upon commissioning and the Benchmark Service Record is completed for each service.
- It has not been modified in any way, other than by ELSON.
- It has not been frost damaged.
- It has not been tampered with or been subjected to misuse or neglect.
- The fault is not scale related.
- Within 60 days of installation the user completes and returns the certificate supplied along with the proof of purchase to register the product.
- It has been installed in the United Kingdom.
- The fault is not caused by high chloride levels in the water supply or incorrect disinfection methods. Maximum permissible chloride level 200mg/l (PPM).

Evidence of purchase and date of supply may be required. The guarantee is transferable. This guarantee does not affect your statutory rights.

Servicing

heateam

heateam is BDR Thermea's very own service division. With us on your side, you can be sure that your customers are in the very best of hands. Totally committed to quality and safety, heateam is open 7 days a week, for 363 days a year, and offers:

- **Dedicated Trade Advice Line** - our helpful and qualified specialists are always on hand to help you with even the most complex technical query.
- **Installer Priority Call-Outs** - our 280 strong team of specifically trained expert heating engineers covers the UK, no one is better qualified to look after Elson's products for the duration of the guarantee.
- **Fully Stocked Vans** - a nationwide fleet of vans, fully stocked with spare parts - meaning we can repair our appliances on the first visit 95% of call-outs.
- **Exclusive Service Plans** - heateam also offer Elson's customers a range of exclusive annual service plans.

Opening Times: Monday-Friday 8am-6pm, weekends and Bank Holidays* 8.30am-2pm.

*excluding Christmas Day and New Year's Day.

Simply call **0844 335 8819** or visit our website at **www.heateam.co.uk**

Spares

For all technical support, replacement parts & service issues please contact:

Electric Water Heating Co.
2 Horsecroft Place, Pinnacles,
Harlow, Essex CM19 5BT
Tel: 0845 0553811
E-mail: sales@ewh.co.uk

SPD
Special Product Division, Units 9 & 10
Hexagon Business Centre,
Springfield Road,
Hayes, Middlesex UB4 0TY
Tel: 020 8606 3567

Parts Center
Tel: 0845 270 9800
www.partscenter.co.uk

Newey & Eyre
Specialists Products Division
Please contact your local branch

UK Spares Ltd
Tower Lane, Warmley,
Bristol BS30 8XT
Tel: 0117 961 6670
www.uk-spares.com

Advanced Water Company Ltd
Unit 5D, Enterprise Way, Vale Park,
Evesham, Worcestershire WR11 1GS
Tel: 01386 760 066

Policy Statement

The policy of ELSON is one of continuous product development and, as such, we reserve the right to change specifications without notice.

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